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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,982	08/30/2001	Takashi Kano	011083	7536

23850 7590 06/28/2002

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WASHINGTON, DC 20006

EXAMINER

MULPURI, SAVITRI

ART UNIT	PAPER NUMBER
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2812

DATE MAILED: 06/28/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/941,982

Applicant(s)

Kano et al

Examiner

Savitri Mulpuri

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Aug 30, 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 3 6) ☐ Other:

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DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 5 -10, 12, 14-16,18 are rejected under 35 U.S.C. 102(b) as being anticipated

by Imai et al..

Imai discloses a method of making nitride based semiconductor device structure by the following process steps: Providing a substrate, growing semiconductor nitride based compound semiconductor layer "24" on the substrate at growth rate of 20 angstroms /second., at a growth temperature of 300 C - 1000 C and film thickness of less 500 angstroms with different preferred thicknesses; and then growing nitride based compound semiconductor layer "25" on the surface of the buffer layer "24"; growing active nitride based compound semiconductor layer "26" and terminal layer "28"(see abstract, col. 7, lines 14-56). Imai further discloses compositional grading layer by changing constituent elements such as III elements. Claims are limited to AlBInTiGaN compound layer with a,b,c,d are less than or equal (< or =) to "0".

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 4, 11, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai et al .

Imai discloses buffer layer growth as high as 20 angstroms/ sec. But does not disclose 25-29 or 51 angstroms/sec. The choice of increasing the growth rate is well within the choice of one of ordinary skill in the art through optimization process of growth by fixing the variables such as growth temperature, pressure, and by changing the supply of material gas such as Al and Ga etc. (See instant background invention, page 2-4).

Claims 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kondow et al in combination with Imai et al.

Kondow discloses a method of nitride based semiconductor layer structure with plurality of devices such as lasers, wave guide using core layer, PIN photo diode FET etc. on buffer layers "62,63" grown on substrate "61" to form OEIC. But Kondow do not disclose to form nitride based semiconductor layers with specific growth rate as instantly claimed. Imai discloses nitride based compound semiconductor layer similar to claimed growth rate. To obtain improved crystal growth in thin films thereby obtaining laser device with excellent characteristics(see summary of the invention).

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Prior art discloses compound based buffer layer growth. .

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Mulpuri whose telephone number is 305-5184.

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The fax phone number for the organization where this application or proceeding is assigned is 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0956.


SAVITRI MULPURI
PRIMARY EXAMINER